



# UNITED STATES PATENT AND TRADEMARK OFFICE

*Ed*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/697,977      | 10/31/2003  | Walter Wirz          | WIRZ5               | 8967             |
| 1444            | 7590        | 07/06/2005           |                     | EXAMINER         |
|                 |             |                      |                     | ROGERS, DAVID A  |
|                 |             |                      | ART UNIT            | PAPER NUMBER     |
|                 |             |                      |                     | 2856             |

DATE MAILED: 07/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                 |              |
|------------------------------|-----------------|--------------|
| <b>Office Action Summary</b> | Application No. | Applicant(s) |
|                              | 10/697,977      | WIRZ, WALTER |
|                              | Examiner        | Art Unit     |
|                              | David A. Rogers | 2856         |

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 05 April 2005.  
 2a) This action is **FINAL**.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-24 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-24 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 31 December 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input checked="" type="checkbox"/> Other: <u>Final Rejection</u> .      |

**DETAILED ACTION**

***Response to Amendment***

1. The applicant's amendment states on page 2 that a replacement abstract has been submitted. A search of the application's file shows that no new abstract has been entered. The objection to the abstract, noted in the previous office action, is maintained until the new abstract is received.

***Response to Arguments***

2. Applicant's arguments filed 05 April 2005 have been fully considered but they are not persuasive. Furthermore, the applicant's arguments are moot in view of new grounds of rejection necessitated by the applicant's amendment.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-10 and 21-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The applicant has amended the claims to use the term "only" to describe the various motions of the disclosed device. The applicant never originally disclosed that their device *only* moves between any two positions. Furthermore, claims 21 and 22 recite steps of using the device and do not further limit the structure of the device.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 11-14, 16, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,211,506 to Pryor *et al.* in view of International Patent Application Publication WO 90/06213 to Dalakian *et al.* and United States Patent 4,437,635 to Pham.

Pryor *et al.* teaches that it is known to use a robotic arm (reference item 301) having an end effector (hand) (shown in figure 16) and a sensor (reference item 300). The sensor is used to inspect the gear teeth. See Abstract and column 11, lines 5-17. The sensor is attached to the robotic arm via a holder (not numbered). Pryor *et al.* does not teach the specifics of the robot.

Dalakian *et al.* teaches a robotic system having a holder (reference item 7) for a gripping hand. The robotic system comprises two parallelogram

linkages. The first linkage is formed of two parallel arms (reference items 10 and 11). The second linkage is also formed of two parallel arms (reference items 13 and 14). Each arm (including whatever arm may be the shortest) comprises two rotary joints (one on each end). The parallelogram is attached to a base (reference item 3). Motion of the parallelogram linkage system through a rotary drive (reference item 26). The holder is swiveled from a first position (stop) to a second position (stop) as the parallelogram is rotated by the rotary drive. As seen in figure 1 the hand is in a retracted position (stop). As seen in figure 2 the hand is in an operating position (stop).

The workpiece (reference item 303) of Pryor *et al.* (being a gear) has an axis, and the robotic system is positioned so that the sensor examines the gear. See figure 16. In combination with Dalakian *et al.* the robotic system would pivot (swivel) in a plane that is parallel to the axis of the gear.

By using the robot of Dalakian *et al.* one can easily inspect gears, move gears, and ensure that the hand/inspection tool is not in the way when other tasks, such as maintenance and repair tasks, have to be performed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Pryor *et al.* with the teachings of Dalakian *et al.* to provide a robotic system having a double parallelogram structure for positioning a tool hand and inspection tool.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor *et al.* in view of Dalakian *et al.* and further in view of United States Patent 4,002,380 to Bowen.

Pryor *et al.* in view of Dalakian *et al.* teaches an inspection tool mounted to a robotic arm. In Dalakian *et al.* the robot arm comprises two parallelogram structures. The individual arms are provided with rotating pivots (reference items 16-19 and 22-25). Pryor *et al.* in view of Dalakian *et al.* does not teach the use of zero-clearance preloaded roller bearings for the pivots.

Bowen teaches that zero-clearance, pre-loaded roller bearings are known in the art. Bowen further teaches that these bearings have a longer life than other bearings and offer greatly reduced shaft runout. Bowen also teaches that the preferred roller bearings can be used on numerous devices, not just on shafts supporting grinding machines.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Pryor *et al.* in view of Dalakian *et al.* with the teachings of Bowen to provide a robotic arm with pivots, wherein the pivots are formed using zero-clearance, preloaded roller bearings for increased life.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor *et al.* in view of Dalakian *et al.* and further in view of United States Patent 6,430,472 to Boillot *et al.*

Pryor *et al.* teaches a gear inspection tool mounted to a robot. Pryor *et al.* in view of Dalakian *et al.* does not teach an inspection tool that slides along its axis.

Boillot *et al.* teaches a tool (reference item 2) having an axis along the its longitudinal direction. The tool is connected to a robotic arm (reference item 4). Boillot *et al.* also teaches that the tool is connected to the arm via a first slider (reference item 18). The slider moves the tool along its axis using a screw (reference item 36) actuated using a motor (reference item 32). A second slider (reference item 16) is moved using a second screw (reference item 34) and second motor (reference item 30). Boillot *et al.* teaches that the sliders are beneficial; in that they provide additional positioning ability of the tool. See the Abstract.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Pryor *et al.* in view of Dalakian *et al.* with the teachings of Boillot *et al.* to provide a sliding means for positioning a

9. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor *et al.* in view of Dalakian *et al.* and further in view of United States Patent 6,532,840 to Hatley *et al.*

Pryor *et al.* in view of Dalakian *et al.* teaches an inspection tool connected to a robotic arm. Pryor *et al.* in view of Dalakian *et al.* does not teach an inspection tool where the measuring probe is arranged in a holder column for displacement at right angles to the tool's axis.

Hately *et al.* teaches an inspection tool (reference item 204). This tool is connected to a holder column (reference item 240). The holder column is displaced via a motor (reference item 232). The displacement is at right angles to the inspection tool's axis. Hatley *et al.* teaches that is displacement is used so that the inspection tool can be located adjacent the any area to be inspected.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Pryor *et al.* in view of Dalakian *et al.* with the teachings of Hatley *et al.* to provide a robotic inspection system having an inspection/measuring tool on a displaceable holder column.

tool on a robot arm.

### **Conclusion**

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

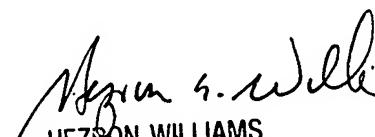
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone number is (703) 305-4451. The examiner can normally be reached on Monday - Friday (0730 - 1600).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

  
daro  
30 June 2005